



# Division of the Civilian Volunteer Medical Reserve Corps

*Engaging volunteers to strengthen public health, emergency response, and community resiliency*

## Disaster Risk Reduction & The Medical Reserve Corps

*Presented at the Missouri Volunteer Symposium  
June 2014*

*by Sonia Jordan  
Medical Reserve Corps Regional Coordinator*

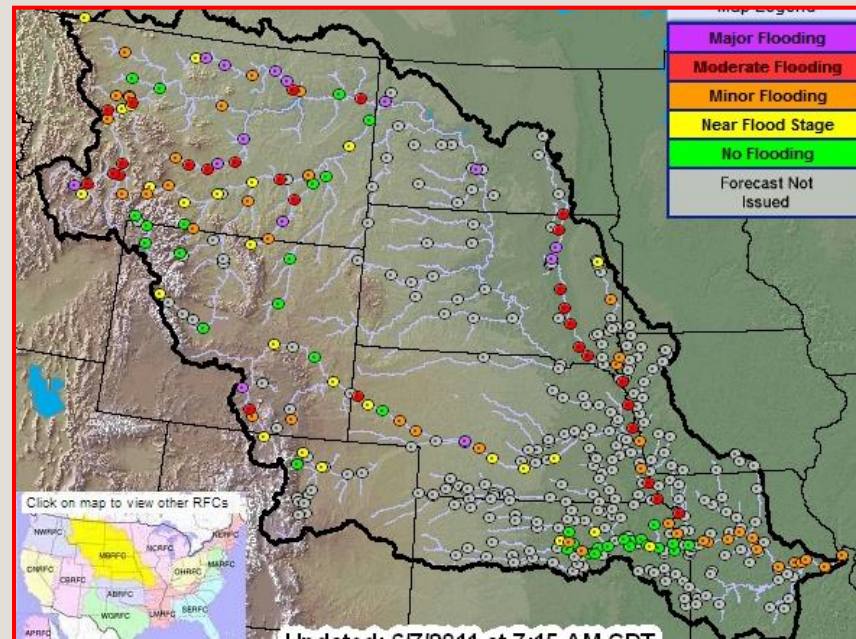


# Agenda

- Disaster Risk Reduction & Community Resilience
- Role of Public Health
- How can the MRC affect resilience/susceptibility?



# 2011 Missouri River Flood



- Floods are the most common natural disaster (worldwide)
- Region VII is affected by flooding
  - MO River flood affected all states in our region
- MRCs active in response

Schipper and Pelling. 2006. "Disaster Risk, Climate Change and International Development: Scope for, and Challenges to, Integration." *Disasters*.

---

*Engaging volunteers to strengthen public health, emergency response, and community resiliency*



# HAZARD VS DISASTER

---

*What's the Difference?*

---

*Engaging volunteers to strengthen public health, emergency response, and community resiliency*



*“There is no such thing as a ‘natural’ disaster,  
only natural hazards.”*



# What is a Hazard?

“A dangerous phenomenon, substance, human activity or condition that may cause ***loss of life, injury or other health impacts***, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.”



2014 The United Nations Office for Disaster Risk Reduction; [www.unisdr.org](http://www.unisdr.org)

Engaging volunteers to strengthen public health, emergency

cy

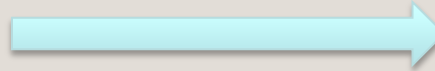


# Compared to a Disaster...

- A disaster happens after the hazard and is dependent on the community's vulnerability



Vulnerability





*“A disaster’s severity depends on **how much impact** a hazard has on society and the environment....Each decision and action makes us **more vulnerable** to disasters—or **more resilient** to them.”*





## In the words of Dr. Mark Keim....



*“...the disaster consists of the interaction between the hazard and the vulnerability of those affected, **not the mere fact of the hazard’s occurrence.**”*

Keim, Mark E. 2008. “Building Human Resilience: The Role of Public Health Preparedness and Response As an Adaptation to Climate Change.” *The American Journal of Preventive Medicine*.

---

*Engaging volunteers to strengthen public health, emergency response, and community resiliency*



# MO River Flood: What is the Disaster?



- Loss of lives (health & medical)
- Loss of homes (infrastructure)
- Loss of livelihood (mental health; economic)
- Other factors?



## Two Components of Disaster Impact Reduction

**Reduce  
Vulnerability**

**Increase  
Resilience**



# DISASTER RISK REDUCTION

---

*Reducing Vulnerability & Increasing Resilience*

---

*Engaging volunteers to strengthen public health, emergency response, and community resiliency*



# What is Disaster Risk Reduction (DRR)?

*“The systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies, and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster.”*



## In Other Words...

*Disaster Risk Reduction is a framework for communities to utilize to lessen the impact of disasters from natural hazards.*

Focus is on actions that are proactive rather than reactive.



# Math Part I: Basic DRR Equation

$$D = H (x) V$$

*Disasters are the impact of the Hazard multiplied by the impact of the Vulnerability.*

D= Disaster

H= Hazard

V= Vulnerability

Keim, Mark E. 2011 "Integrating the MRC into Community-Based Disaster Risk Reduction." Presentation at the Region V and VII MRC Regional Conference.

---

*Engaging volunteers to strengthen public health, emergency response, and community resiliency*





$$D = H(x) V$$

*To reduce risk, we either have to  
reduce the Hazard or the  
Vulnerability.*



# Hard to reduce a hazard...



# ...but we can reduce our vulnerability to the hazard.



# Let's Talk about Vulnerability

*“The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effect of a hazard.” \**

How at risk are you to physical or emotional injury?\*\*

\* 2014 The United Nations Office for Disaster Risk Reduction; [www.unisdr.org](http://www.unisdr.org)

\*\*Keim, Mark E. 2011 “Integrating the MRC into Community-Based Disaster Risk Reduction.” Presentation at the Region V and VII MRC Regional Conference.



## Math Part II: Basic Vulnerability Equation

$$V = \frac{E (x) S}{R}$$

*Vulnerability is your Exposure to the Hazard multiplied by your Susceptibility. Your Resilience can reduce your Vulnerability.*

*V= Vulnerability*

*E= Exposure to the Hazard*

*S= Susceptibility to the Hazard*

*R= Resilience*

$$V = \frac{E (x) S}{R}$$

Exposure:

- *“People, property, systems, or other elements present in hazard zones that are thereby subject to potential losses.”*



Susceptibility:

- *“The state of being at risk, if exposed to a hazard.”*

$$V = \frac{E (x) S}{R}$$

Resilience:



- *“The ability of a system, community or society exposed to hazards to **resist, absorb, accommodate to and recover** from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions”.*



# MO River Flood: How Vulnerable are You?

$$V = \frac{E(x) S}{R}$$

- **Vulnerability:** How at risk (emotionally/physically) is your community to the flood?
- **Exposure:** Living in a flood zone
- **Susceptibility:** No flood insurance
- **Resilience:** Active MRC, CERT, and LEPC





# Let's Put it All Together....



$$\text{Disaster} = H \times V$$

$$V = \frac{(E \times S)}{R}$$

**H** = *Hazard*

**V** = *Vulnerability of a Population*

**E** = *Exposure to the Hazard*

**S** = *Susceptibility to the Hazard*

**R** = *Resilience*



# Quick Review

- Disasters are Hazards (x) Vulnerability
  - We can't control the Hazard, but we can control our Vulnerability
  
- How?
  - Reduce Exposure (hard)
  - Reduce Susceptibility
  - Increase Resilience



# Reduce Susceptibility / Increasing Resilience

- **Susceptibility:** reduce through prevention and mitigation
- **Resilience:** increase through preparedness, response, & recovery

Keim, Mark E. 2008. "Building Human Resilience: The Role of Public Health Preparedness and Response As an Adaptation to Climate Change." *The American Journal of Preventive Medicine*.

---

*Engaging volunteers to strengthen public health, emergency response, and community resiliency*



# Two Types of Resilience

## 1. Provided by Nature

- a) MO River Flood Example: Living on a hill; flow of water away from your community

## 2. *Provided by Human Activity*

- a) MO River Flood Example: Increased access to healthcare, safe water, prevention of spread of infectious disease



# PUBLIC HEALTH & THE MRC

---

*How do we increase resilience?*

---

*Engaging volunteers to strengthen public health, emergency response, and community resiliency*



**Q. How can public health affect vulnerability?**

**A. By increasing resilience through human action!**





# Public Health: Suited to Increasing Resilience

- Occurs at the community level
- Continually promoting safety and health
- Works before a disaster to make a community healthy and strong

Keim, Mark E. 2008. "Building Human Resilience: The Role of Public Health Preparedness and Response As an Adaptation to Climate Change." *The American Journal of Preventive Medicine*.

---

*Engaging volunteers to strengthen public health, emergency response, and community resiliency*



Healthier **people, homes, and communities** before a disaster leads to less illness/injury during and after a disaster.



Engaging volunteers to strengthen public health, emergency response, and community resiliency



- **Healthy People:** “Less likely to suffer disaster-related morbidity or mortality”
- **Healthy Homes:** “Designed and built to stay safe during extreme weather”
- **Healthy Communities:** “Minimize exposure of people and property to

Shobba Srinivasa, O’Fallon, Dearry. 2003. “Creating Healthy Communities, Healthy Homes, Healthy People: Initiating a Research Agenda on the Built Environment and Public Health.” *The American Journal of Preventive Medicine*.

---

*Engaging volunteers to strengthen public health, emergency response, and community resiliency*



# MO River Flood Example



## Flood Vulnerability

## Public Health Activity

(Increasing Resilience/Reducing Susceptibility)

Loss of Shelter

*Shelter with Support Services*

Loss of Sanitation & Hygiene

*Health Education & Promotion*

Loss of Healthcare Services

*Facility Preparedness Planning*

Increased Mental Illness

*Psychological First Aid Training  
Post-disaster Screening and Referral*

Exacerbation of Chronic Disease

*Health Screenings  
Community-Based Primary Care Outreach*

*Engaging volunteers to strengthen public health, emergency response, and community resiliency*



According to Dr. Mark Keim:

*“An example of human action that affects resilience is social organization that facilitates (or hinders) response and recovery.”*



Keim, Mark E. 2008. "Building Human Resilience: The Role of Public Health Preparedness and Response As an Adaptation to Climate Change." *The American Journal of Preventive Medicine*.

---

*Engaging volunteers to strengthen public health, emergency response, and community resiliency*



# Medical Reserve Corps Vision:

*Dedicated Volunteers and Strong Active Units...  
Building Resiliency and Reducing Vulnerability*



## ***How does the MRC build resilience\*?***

\*Resilience activities are done through preparedness, response, & recovery





# MO River Flood Example



## Flood Vulnerability

## Public Health Activity

(Increasing Resilience/Reducing Susceptibility)

Loss of Shelter

*Shelter with Support Services*

Loss of Sanitation & Hygiene

*Health Education & Promotion*

Loss of Healthcare Services

*Facility Preparedness Planning*

Increased Mental Illness

*Psychological First Aid Training  
Post-disaster Screening and Referral*

Exacerbation of Chronic Disease

*Health Screenings  
Community-Based Primary Care Outreach*

*Engaging volunteers to strengthen public health, emergency response, and community resiliency*



# Real-Life MRC Activities: 2011 MO River Flood

**The Corps**  
Missouri Volunteer  
Veterinary Corps

Missouri veterinarians, animal health  
technicians, and veterinary students  
volunteering to respond to animal emergencies.

A Project of the  
Missouri Veterinary  
Medical Association

**Safeguarding Animal and  
Public Health in Missouri**

- **Sheltering:**
  - **MO Volunteer Veterinary Corps** provided support at animal shelters to support evacuees; helped **600** animals
  - **Doniphan Co KS MRC** had one volunteer work at a shelter
  - **Bollinger Co MO MRC** put on stand-by to assist with shelter



# Real-Life MRC Activities: 2011 MO River Flood (cont'd)



- Mental Health:
  - **Eastern NE/Western IA MRC** provided Behavioral Health volunteers to assess mental health needs of evacuees in shelters; evaluated **100** people



# Real-Life MRC Activities: 2011 MO River Flood (cont'd)



- Healthcare Access:
  - **Cooper Co MO MRC** provided **40** Tetanus vaccines to first responders
  - **Easter NE/Western IA MRC** provided **1300** vaccines to first responders



# Real-Life MRC Activities: 2011 MO River Flood (cont'd)



- Community Resilience:
  - **MRC of Kansas City** provided 4 volunteers to help with sandbagging
  - **Doniphan Co KS MRC Volunteers:**
    - Cooked & served meals to National Guard
    - Managed sandbagging efforts
    - Tracked evacuees



# *How does the MRC reduce susceptibility\*?*

\*Reduce susceptibility is done through prevention and mitigation





**In 2013**

*The MRC engaged in over **900** public health & preparedness activities, including...*



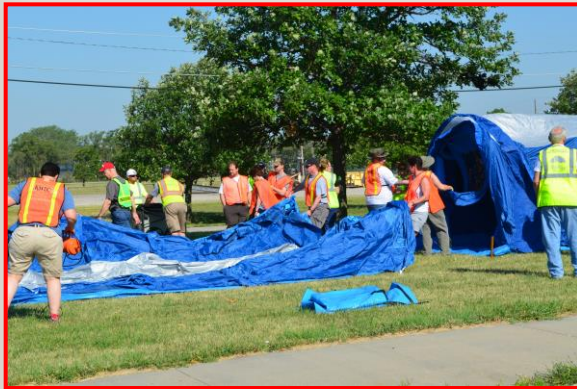
46 Screenings



53 Vaccine Dispensing



71 Drills/Exercises



66 Emergency  
Operations Training



63 Personal/Community  
Preparedness



42 Prevention

*Engaging volunteers to stren*

*onse, and community resiliency*





# Division of the Civilian Volunteer Medical Reserve Corps

*Engaging volunteers to strengthen public health, emergency response, and community resiliency*

## Thank You!

Sonia Jordan

Region VII MRC Coordinator

[Sonia.jordan@hhs.gov](mailto:Sonia.jordan@hhs.gov)

(785) 452-2890

[www.medicalreservecorps.gov](http://www.medicalreservecorps.gov)

## Follow Us!

- MRC on Facebook: [www.facebook.com/medicalreservecorps](http://www.facebook.com/medicalreservecorps)
- MRC on Twitter: [www.twitter.com/MRC\\_OSG](http://www.twitter.com/MRC_OSG)